# **GUIDE FOR AMERICAN BUSINESS: Energy Markets of Europe, & the NIS**

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## **ENERGY** -- Georgia

## I. Statistical Information -- Primary Energy Consumption

2000	Ktoe (1)	%
Coal	7	1
Petroleum	261	16
Natural Gas	797	50
Hydro	512	33
Nuclear	n/a	
Renewable	n/a	
TOTAL	1586	100.0

(1) thousand tons of oil equivalent

## II. Evaluation of Sector -- Electrical Power Systems, Oil and Gas Field Machinery and Services and Renewable Energy Equipment

- A) On a scale of 1 (low) to 5 (high), evaluate the priority given by the host government to energy development: 5
- B) On a scale of 1 (low) to 5 (high), evaluate country's receptivity to U.S. products and services: 4
- C) On a scale of 1 (heavy) to 5 (little), evaluate competition for U.S. exporters from local domestic suppliers: 4
- D) On a scale of 1 (heavy) to 5 (little), evaluate competition for U.S. exporters from third-country suppliers: 2
- E) On a scale of 1 (severe) to 5 (little), evaluate overall effect of trade barriers on U.S. exports of products and services: 4

#### **III. Narrative Information**

Since Georgia became independent, a series of reorganizations in the power sector have occurred as a result of various reform efforts by the Government in cooperation with the

World Bank, the European Bank of Reconstruction and Development (EBRD), the Kreditanstallt fuer Wiederaufbau (KfW), and the various United States government organizations. The reforms are intended to provide for cost recovery; increase energy efficiency; improve policy-making; and support the privatization of energy companies. Energy continues to be a key sector of Georgia's general privatization plan.

Power sector policy is determined by the Georgian President, Parliament, and, in particular, by the Fuel and Energy Ministry. The later was established in June of 1996, in an effort to coordinate key reform policies, as well as promote foreign investment in the energy sector, while refraining from direct participation in energy production and distribution. An independent Regulatory Commission was established by passage of a comprehensive electricity law in July 1997, as amended in May 1999, to regulate electricity tariffs in an effort to bring them to cost recovery levels. Also, the law created a legal basis for launching a wholesale electricity market and regulating transportation and dispatch of the natural gas supplies. In April 1999, Georgia passed the Oil and Gas Law and created the Agency for the Regulation of Oil and Gas Resources for state management of operations in the oil and gas sectors.

To coordinate new reforms in the energy sector, the former state monopoly Sakenergo has been transformed into Sakenergo-Generation, a holding company with the generation function, and a state-owned enterprise called Sakenergo with transmission and dispatch functions. Later, the Sakenergo-Generation was split into the state owned Energy Generation Company with administrative function and three state-owned holding companies JSC Enguri, JSC Enguri Dam, and JSC Vardnili. Sakenergo, in turn, was divided into a state owned electricity transmission company Elektrogadatsema and a dispatch company Dispecherizatsia. The metering and sales functions were assigned to the newly created Electricity Wholesale Market. By 2002, Electrogadatsema, Dispecherizatsia and Electricity Wholesale Market will be under a private sector management. It is expected that the change will significantly contribute to further improvement in the performance of the Georgian Power Sector.

Nineteen small hydro power plants totaling 90 MW were privatized in a mass privatization process, which started in 1995. Three hydro power plants totaling some 190 MW (Jinvali HPP, Zahesi HPP, and Ortachala HPP) have been leased to private operators. Most of Georgia's hydro and thermal generation units and distribution enterprises were converted into joint stock companies and privatized through competitive tenders to private investors. The World Bank has financed the services of an investment bank, Merrill Lynch, which was selected by a tender to implement the privatization plan. To date, nearly 70% of all generation and distribution assets have been privatized.

In December 1998 75% of the electricity distribution company serving Tbilisi was sold through a privatization tender to American company AES. Also, AES bought two generation units (300 MW each) of Tbilsresi, the largest Thermal Power station in Georgia located at Gardabani, near Tbilisi, and two hydro power plants Khrami-1 and Khrami-2 (223 MW both) for a total generation capacity of 823 MW. The government intends to privatize the remaining distribution and generation assets.

The hydropower generation assets to be privatized consists of Gumati, Lajanuri, Rioni, Shaori, and Tkibuli hydro power stations. Their installed capacity ranges from 38 MW to112 MW, totaling 345 MW. Also, the Government of Georgia has decided to further consolidate

distribution assets in eight regional Joint Stock Companies (Guria, Imereti, Kvemo Kartli, Mtskheta-Mtianeti, Racha, Samegrelo-Zemo Svaneti, Samtskhe Javakheti, and Shida Kartli). In total, their distribution network covers about 630,000 customers. The distribution and generation assets may be privatized as one package or separately, based on what market demand.

Significant opportunities for U.S. companies exist in electricity power transmission projects. There are also export opportunities for U.S. manufactured equipment and services during rehabilitation, upgrading and management of existing plants.

According to the General Privatization plan of 1998-2000 for energy sector enterprises and organizations, the state oil company Saknavtobi (Georgian Oil) has been restructured and transformed into a joint stock company under state ownership, except for joint ventures founded with foreign companies. Controlling interests in oil companies under a former state company Saknavtobproducti (Georgian Oil Products) are being privatized. However, the state privatization plan does not include the Tbilisi Oil Terminal and Khashuri-Batumi Main Oil Pipeline, which will remain in state ownership.

The state enterprise Saktransgasmretsvi (State Gas Enterprise) was transformed into a joint stock company with 100 percent of stock temporarily remaining in state ownership. The controlling block of stock in gas operational and maintenance enterprises are being privatized by means of a tender. This stage does not include the privatization of the state-owned Joint Stock Company Georgian International Gas Corporation (GIG) which is responsible for managing Georgia's main gas pipeline.

The joint stock company Saktkhevadgazi (Georgian Gas Liquids), which conducts storage and distribution of liquid natural gas through nine distribution units with a total capacity of 12,000 tons, will temporarily remain in state ownership.

The gas distribution companies in five Georgian cities (Kutaisi, Bolnisi, Rustavi, Marneuli, and Kaspi) were sold by auction conducted by the Ministry of State Property in January 1998. Sakgazi, a Georgian-Russian joint venture, acquired these companies. The Ministry of State Property Management has announced a tender to sell the majority of stock in the Tbilisi gas distribution company Tbilgazi.

#### Electrical Power Generation and Transmission Equipment (ELP)

2000	Installed Capacity Thousand MW	Production Billion kWh
Thermal	2,10	1.4
Hydro	2.73	6.0
Total	4.83	7.4

Source: State Department of Statistics of Georgia

As of January 2000, only 2,100 MW of effective capacity was available in Georgia. During the six month period between October 2000 and March 2001, the daily generation was estimated at 16-17 million kWh (6.5-7.0 million kWh thermal and 9.0-10.0 million kWh

hydro), while daily demand was estimated to have been at 36 million kWh. This deficit was handled by restricting energy use and scheduling blackouts throughout Georgia. The winter energy deficit has been exacerbated, partly due to a shortage of imported gas supplies.

The pattern in Georgia, repeated in 2000, is to switch from thermal capacity to hydropower capacity in the spring. (Note: No capacity is available from the Tkvarcheli thermal plant located in Abkhazia, which is not controlled by the Georgian central Government).

During the calendar year 2000, contributions to domestic supply were:

Source:	Billion kWh
Thermal Plant	1.4
Hydroplant	6.0
Net imports from Russia, Azerbaijan, and Armenia	0.4
Total:	7.8

Source: State Department of Statistics of Georgia

Georgia's electricity generating, transmission and distribution infrastructure has been deteriorating since the late 1980s. Poor financial resources combined with increasingly challenging operating conditions have crippled many of the power sector's physical plants, which are among the oldest in the former Soviet Union. Nevertheless, the network losses have experiencing a notable improvement since the sector's restructuring project was launched in 1996, from as high as 31% in 1994 to the current level of 11%. The management contract for the transmission and dispatch system is expected to significantly strengthen this positive trend.

As a consequence, rehabilitation of the entire system has become a priority for the Georgian Government and for providers of international assistance. From 1996 through 2001, the U.S. has provided technical assistance to help Georgia segment and privatize the sector. The next 10-15 years will require significant capital injections into Georgia's electricity power generating and distributing systems. That includes \$1.5 billion for rehabilitation of generation facilities and about \$1.2 billion for rehabilitation and development of distribution companies. This represents great export potential for U.S. energy companies, both in terms of services and equipment.

Electricity consumption during the Soviet era averaged 16-18 billion kW/h annually. Comparatively, 7.8 billion kW/h was consumed in 2000. International experts have estimated that the electricity consumption could increase significantly over the next decade. According to this study, the main growth would come from the industrial consumption by 2005 and double it by 2015.

The Georgian transmission system consists of:

617 km of longitudinal 500 kV lines; 6,000 km loop of 220 kV lines; 21 km of 300 kV lines; 4,180 km of 110 kV lines; 3,360 km of 35 kV lines.

Most of the 220 kV system was constructed in the 1950's, while the 500 kV grid was built in the 70's and 80's. West and East Georgia is connected by the 500 kV transmission line (Enguri-Zestaphoni-Ksani-Gardabani) and several 220 kV transmission lines. The main transmission line is in acceptable condition. However, the three 220 kV lines, which must operate in parallel with the 500 kV east-west transmission line, require rehabilitation. Georgia has transmission lines with Russia in the northwest (Enguri-Russia 500 kV and Bzipi-Russia 220 kV), Turkey in the southwest (Batumi-Turkey 220 kV), Armenia in the South (Gardabani-Armenia 220 kV) and Azerbaijan in the East (Ksani-Azerbaijan 500 kV and Gardabani-Azebraijan 330 kV). According to World Bank estimates, \$ 100 million will be required for rehabilitation and modernization of the transmission and dispatch network over the next 5-10 years. Rehabilitation of these lines as well as the construction of new transmission lines will allow the system to operate more efficiently and work in parallel with transmission lines in the neighboring countries.

The Georgian distribution system of lines operating at 0.4 to 500 kV is unusually long, totaling over 100,000 km. There are 455 substations of 35 kV and higher voltage, and over 10,000 transforming stations of 6-10 kV. It is fed from the transmission system via 21 major substations. Currently several of these areas operate independently from Georgia's main electricity network. Part of the break-away Abkhazia region receives electricity from Russia, as does South Ossetia. The Autonomous Republic of Adjara is served by Turkey in winter. Georgia's eastern section, Kakheti, has been connected to the Azerbaijan grid for power transfers.

Georgia's power system is currently operating in the red. The combined weight of aging equipment, little or no maintenance, and failure of customers, both residential and commercial to pay for service have brought the system to an impasse. Due to recent inflow of international investment and expertise in electricity generation and distribution sub-sectors, the operation of the system is expected to improve in the future. As technical capabilities of Georgia's power facilities improve, including transmission and dispatch systems, the opportunities for its low cost hydro energy electricity exports may become increasingly attractive to neighboring Turkey. No major new construction is currently carried on.

Electricity import and export in 2000 in Million kWh was as follows:

	Import	Export	Surplus
Russia	259	5	+0.254
Armenia	360		+0.360
Turkey	-	206	-206
Total	620	212	+408

Source: State Department of Statistics of Georgia

Through July 1, 2002 imports of electricity are exempted from VAT. Generation and supply

of electricity other than supply to the customers, including supply of electricity for resale, is not taxed.

Tariffs have risen significantly during the last several years and since May of 1999 are 9.0 Tetri/kWh for retail customers in Tbilisi and 8.3 Tetri/kWh for retail customers in the rest of Georgia. (Note: 1 Cent is about -- 2 Tetri; \$ 1 -- 2.0 Lari.) Of which, the weighted average electricity generation tariff for both hydro and thermal supplied to transmission network is 3.5 Tetri/k kWho including VAT (7.9 Tetri/k kWh for thermal and 1.7 Tetri/k kWh for hydro power stations). The rest are tariffs for electricity transmission, dispatch and distribution. Currently, the average wholesale tariff for imported power is 6.2 Tetri/k kWh including VAT. According to foreign experts, the current tariffs for electrical energy still fall short of actual costs and will rise in the near future.

No power equipment manufacturing facilities exist except for a recently established local production of meters. The import of the equipment and spare parts for the energy sector are subject to 20% VAT and a 12 % tariff. There is no currency convertibility problem in Georgia. Money transfers are carried out through the Georgian banks. However, local project financing sources are limited and bank loans are expensive. There is no local restriction on repatriation of capital or profit.

## Oil & Gas Industry and Equipment Market

Proven oil reserves in Georgia total 12 million metric tons. Despite a growing number of foreign oil companies interested in producing oil in Georgia, there has been a decrease in oil production in the last tree years from 133,800 and 119,200 metric tons in 1997 and 1998 respectively to 109,500 metric tons in 2000. Domestic natural gas reserves are estimated at 10 billion cubic meters, however, little natural gas is being produced for commercial use. In the next few years the number of companies in the oil and gas sector as well as production of oil and gas, from both onshore and offshore deposits, is expected to increase in Georgia.

An American firm, Frontera Resources, started oil extraction from an eastern Georgian field in May 1998. The company plans to further extend the exploration works and significantly increase oil production. Canadian, British, and Swiss companies are successfully operating in the east Georgian region of Kakheti. Also, a contract has been signed between the Georgian state Joint Stock Company Saknavtobi and an American firm, Anadarko, on oil development from the Black Sea shelf.

Currently there are three oil refineries in Georgia. The capacity of the oil refinery in the Georgian Black Sea port of Batumi is 4.5 million metric tons a year. Currently the refinery is ineffective and non-operative. Annual capacity of a small block-type Oil Refinery (GAOR) in Samgori near Tbilisi is 500 metric tons (4,000 barrels) a day. The capacity of the refinery will be increased to 750 metric tons (6,000 barrels) a day in the near future. Another small refinery in east Georgia produces 250 metric tons (2,000 barrels) a day.

The existing oil pipeline in Georgia connects the Khashuri oil terminal in central Georgia with the Georgian Black Sea port of Batumi. The pipeline has a diameter of 530 mm and a length of 232 km. An American company, Chevron, was considering rehabilitation and operation of the Kashuri-Batumi pipeline but has abandoned the project.

In March 1996, a pipeline construction and operating agreement was signed between the

Georgian International Oil Corporation (GIOC) and AIOC founding a partner company Georgian Pipeline Company (GPC). The agreement entitled AIOC to construct a pipeline (Baku-Supsa Western Route Project) for early oil transportation from the Caspian Sea through Georgia to the new export terminal at Supsa on the Black Sea coast. The inauguration of the 100,000 barrels a day oil pipeline and Supsa terminal was held in April 1999.

In November 1999, the governments of Azerbaijan, Turkey and Georgia agreed to build a new pipeline from Azerbaijan across Georgia to Turkey's Mediterranean port in Ceyhan. The Baku-Ceyhan main export pipeline will carry 1 million barrels of oil a day by 2004. Host government agreements have been finalized recently and a company to manage the pipeline project is being formed. The AIOC consortium has completed basic engineering of the pipeline and is now in detailed engineering.

Azerbaijan and Turkey have signed Sales and Purchase agreement to transit gas from Shah Deniz gas field offshore Baku and transit it through Georgia and to Turkey. The three countries, Azerbaijan, Georgia and Turkey, are negotiating HGAs and IGAs at this time for this gas pipeline it is estimated that 2 bcm of gas will flow to Turkey by 2004/5.

Several projects were proposed on construction of a new gas pipeline across Georgia. Also, local market demand for gas supplies is growing steadily. Formerly the 46 cities and 200 villages in Georgia consumed gas through a pipeline network, which exceeded 10,000 km in length. This network included a 2,300 km trunk line, and thousands of gas distribution stations of which only the main trunk line and a few distribution pipelines are currently functioning.

According to preliminary data provided by the Georgian State Department for Statistics, oil consumption in 2000 was 261 thousand metric tons, while approximate natural gas consumption equaled 920 million cubic meters. However, this accounts only for local production and registered imports, while contraband of oil is estimated at 2,740 metric tons (20,000 barrels) a day.

The coal reserves in Georgia are estimated to be 400 million metric tons. However, the coal industry has been declining during the last 2-3 decades. Currently a state enterprise Saknakhshiri (Georgian Coal) operates two main coal mines. The coal production in 1999 was 7,300metric tons of which majority was consumed by the Ferro-Alloy Plant in Zestaphoni.

Most mining facilities were built in the Soviet period. Their technical level is now obsolete and there is massive environmental damage and risk of high liability. There are some exceptions as a result of joint ventures that have recently started operations in Georgia.

There are no oil and gas equipment manufacturing facilities. An on-going privatization in the gas distribution sector will increase the demand for meters and other equipment for rehabilitation and development of obsolete local gas distribution networks, which have been inoperable for the most part for the last four years.

#### Renewable Energy Equipment

The Government supports the development of renewable energy; however implementation of

projects is hampered by a lack of funds.

Hydro power is the only significant renewable energy source in use. Georgia's hydropower potential is estimated at 80 GWh, of which 10 % has been harnessed. The Government believes that the small hydro power sector has the best prospects for being developed in the near future.

Favorable conditions for the construction of wind energy plants exist along the Black Sea coast including the Poti and Batumi areas, in Sabueti in central Georgia, suburbs of Tbilisi, and over 160 meteorological sights in Georgia used for measuring wind velocity. On wind utilization issues, Georgia is currently working with several countries including Japan, Denmark, Ukraine, and Germany.

#### IV. Major Procurements or Private Projects on the Horizon (next 18-36 months)

#### Proposed projects:

- a) Renovation of the Enguri dam and tunnel foreign experts estimate the project cost at \$130 million. The EBRD will fund the rehabilitation of four out of five units of 260 MW each at the Enguri power station, and rehabilitation of Vardnili-1 hydro power station \$32.75 million. An additional \$14 million will be allocated by the Georgian government. The EU has allocated \$5 million for rehabilitation of the fifth unit at Enguri. A winner in the tender for electromechanical and engineering works will be announced by the end of 2001. The EU has allocated an additional \$5 million to repair the broken stop log.
- b) Proposed KfW-financed rehabilitation of the Vartsikhe Cascade DM 83 million.
- c) Proposed construction of a high voltage transmission line, Gardabani-Kars, linking Azerbaijan through Georgia with Turkey. The transmission line will be about 190 km long and will start from the Gardabani substation in Georgia and run through Akhaltsikhe to the Turkish border. The construction started during Soviet era but then stopped because of a shortage of funds. The government of Georgia is expecting the private sector to develop this project. Estimated project cost is \$120-\$140 million (according to U.S. experts and the Georgian government).
- d) Construction of the run-of-river 100 MW hydro power plant on the Rioni River near village of Tvishi.
- e) Completion of Khudoni hydro electric power project of three 230 MW units in western Georgia. \$500 million (according to German experts). About 30 percent of work has been completed (excavation and civil works).
- f) Renovation of the Tbilisi Heat and Power Station in downtown Tbilisi \$50 million Tbilisi TPS consists of three (of 6 MW each) generating units connected to the Tbilisi distribution system.
- g) Rehabilitation of inoperable generation units of Gardabani thermal power station and construction of unit 11 originally planned to be 300 MW gas-fired condensing unit. Ultimately, installation of a combined cycle facility of 200-250 MW is being considered in place of unit 11.

h) Construction of a 150-200 MW coal fired plant operating on indigenous fuel in Tkibuli.

Due to constraints of gas supply and strong hydropower potential, the government of Georgia encourages construction of new hydro power stations. Several investment and rehabilitation programs are underway including interest of a Japanese company to invest in Georgia's hydropower sector and the agreement of February 2001 with Chinese officials to build a hydro power station in eastern Georgia. A list of the identified potential sites for new construction is available from the Georgian Ministry of Fuel and Energy. Other sales prospects are smaller capacity generators (up to 1 MW), cables, switches, accumulators, lighting, meters, transformers, conductors and spare parts.

General oil and gas equipment for downstream and upstream operations will have a good prospect in the following next years.

## V. Major Trade Events/Fairs

No Trade Events/Fairs are scheduled in Georgia for the next half a year.

#### VI. Country's Methods of Procurement

Little in the way of domestic funds are available for project financing. Funds are being made available from donor countries and organizations: the World Bank, the EBRD, IFC, TDA, OPIC, Ex-Im bank OECF and KfW; procurement is done in connection with these organizations. Georgia also qualifies for low/no interest IDA funds.

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